

AMENDMENTS TO THE DRAWINGS

Replacement drawing sheets are provided for sheets 1-8 of the drawings, which contain Figures 1-16. A new drawing sheet 9 is also provided containing a new Figure 17, which is a copy of Figure 13 with new reference numerals.

The illustrations in the drawings are unchanged from the prior drawing figures except for new and amended reference numerals that are supported in the specification. Accordingly, no new matter is contained in the drawing illustrations.

REMARKS

This Supplemental Amendment supplements the amendment filed on January 24, 2008. In accordance with the suggestions received from the examiner on February 15, 2008, applicant has further amended claims 7, 9 – 11, and 14 to clarify the portions of these claims that were noted by the examiner. Specifically, claim 7 has been further amended to change “condensor” to read –condenser-- on line 2 of the claim. Claim 9 has been further amended to change “the first external wall” to read --a first external wall-- on line 3 of the claim. Claim 10 has been further amended to change “the third ring tube bundle” to read --the second intermediate vertical ring tube bundle-- on lines 3 and 4 of the claim. Claim 11 has been further amended to change “interior and exterior walls” to read --internal and external walls-- on line 4 of the claim. Claim 14 has been further amended to change “the evaporators and condensers” to read --the first stage evaporator, the final stage evaporator, the pre-final stage condenser and the final condenser-- on line 3 of the claim.

Remarks Pertaining to the Final Rejection of October 4, 2007

In the advisory action of January 8, 2008, a previous response filed on December 26, 2007 was denied entry for failing to place the application in condition for allowance. After extensive review and consultation with the Examiner, the present response has been submitted containing amendments to the specification, claims and drawings (reference numeral changes only) which it is submitted should place the case in condition for allowance. Favorable action is requested.

Claims 5-16 remain in the application. Claims 5-7, 9-11, and 13-16 have been amended. Reconsideration of this application in view of the amendments noted is respectfully requested.

In response to the Office action, Applicant has provided Replacement and New Drawing Sheets as needed to include new and corrected reference numerals added to

the specification, as suggested in the Office Action, to enumerate all elements listed in the claimed subject matter and those added to the description which are shown in the drawings. A new Figure 17 has been added and copied from original Figure 13 but having new reference numerals pertaining to the third stage evaporator recited in the claims. This evaporator is identical to the second stage evaporator except for dimensional changes, not claimed, required for application in the third stage of the four stage model illustrated in Figure 16. Withdrawal of the drawing objections is respectfully requested. No new matter has been added.

The specification has been amended to overcome the objections by deleting matter introduced in the previous amendment, which may be considered to be new matter. Also, the phrase "...inserted one inside each other on a horizontal base" is not new matter, since the bottom sheet of the base 52 or 38 is clearly shown to be horizontal in all the figures and supports all of the evaporators. The paragraphs beginning on page 1, line 29 and page 4, line 14 of the original specification have been amended to specify that the evaporator stages are connected in series (as recited in claim 5). This is clear from the fact that vapor and residual salt water formed in the first stage are conducted to the following stage to heat its tube bundle and form additional vapor in the tubes while forming condensate from vapor partially condensed on the outside of the tubes. This process is repeated with additional evaporators in the second and third models. See the paragraph beginning on page 5, line 16 of the specification as filed.

The fourth evaporator is renamed the final evaporator 71 as it is used in the four stage model and all the other models. The floating heads include floating head 21 of the final stage and 48 from the second stage (from the original specification) and 48' in the third stage as amended.

The first six paragraphs amended on pages 2 and 3 of this amendment pertain to background of the present invention. Thus, portions added in the prior amendment are not believed to be new matter as to the present invention. The present

changes restore some of the original language, make spelling corrections and delete unnecessary matter.

The present amendments replacing paragraphs in the Detailed Description of the Invention are based on the present and new drawings and add names and reference numerals as necessary to support the amended claims. Spelling corrections are also made. Further, the name of the second stage of the two stage model of the apparatus is changed to the final stage, along with all the components referring thereto. This final stage is the same in the first, second and third models so the name change facilitates the use of dependent claims for the second and third models as well as for the subsequent claims.

Claims 5-16 were rejected under 35 U.S.C. 112, first and second paragraphs, but were found allowable if rewritten to overcome these rejections. The claims have been amended to supply structural cooperative relationships as required as well as clarifying operational material. Withdrawal of the Section 112, first and second paragraph rejections is respectfully requested.

No new matter has been introduced into the application by the present amendments, since all the changes in the application are based on the original drawings and disclosure of the original application. Both original and new terms forming the claimed subject matter are supported by features identified with reference numerals in the drawings and terms recited in the specification.

It should be clear that the distillation apparatus recited in each of the claims is a complete unit having both evaporation and condensation functions. Referring, for example, to the two stage model recited in claim 5, the first stage evaporator operates to produce both heated vapor and residual undistilled water carried by suction into the first vapor chamber. The residual water is carried by vacuum and gravity feed means from the first vapor chamber to the second stage floating head where it is suctioned into the tubes of the second stage bundle. The first stage vapor is directed against the tubes of the second stage tube bundle where it loses heat to the residual water in the second stage tubes to further vaporize the water in the second stage evaporator. However, the vapor from the

first stage is partially condensed on the second stage tubes as it loses heat, and it forms condensate that is drawn off from the second stage evaporator, which acts also as a condenser. Thus, the two evaporators of the apparatus can produce condensate without the presence of a final condenser and thus qualify as a distillation apparatus. In this case, the vapor formed in the second stage evaporator may be used for other purposes than distillation, such as heating.

If desired, the distillation capacity of the apparatus may be increased by providing a final condenser as shown in the two stage model of Fig. 1 and applied also to the other models as recited in claims 13 to 16 of the application as amended.

The application has been reviewed and amended to correct word spellings and other errors including those referred to in the Office Action.

Since the subject matter of the previous claims was indicated as being allowable and the case has been extensively revised to overcome all objections and rejections set forth in the Office Action, this application is now believed to be in condition for allowance. Accordingly, withdrawal of the final rejection and allowance of the case is respectfully requested.

Remarks Pertaining to the Advisory Action of January 8, 2008

The advisory action raised the questions of whether new matter has been introduced in the amended claims and, if not, whether proper antecedent support is provided in the additional limitations of the claims.

The fact that there is no new matter is shown by the addition of reference numerals in the specification and the original drawings identifying all the elements of the amended claims as being present in the original drawings. The one new drawing FIG. 17 is a copy of original FIG. 15 with the reference numerals primed to show that the components of the second and third stage evaporators 81, 91 are identical, except for dimensions not claimed, and thus do not include new matter.

The presence of antecedent support has been made more apparent by introduction of the claimed subject matter, word for word, of claims 5, 6 and 7 into the Summary of the Invention by the present amendment at page 1, after line 27. Note that claim 5 as amended is a generic claim, broadly applying to the first stage 61 (ring shell and tube) and final stage 71 (cylindrical vertical tube) evaporators, which are also included in all the claimed embodiments of the invention. Claim 6 adds to claim 5 the second stage evaporator 81 (vertical ring tube) which is inserted between the first and final stage evaporators of claim 5, using the alternate first stage evaporator 61', also covered by claim 5. Claim 7 adds to claim 6 the third stage evaporator 91 (vertical ring tube) which is inserted between the second and final stage evaporators of claim 6.

In addition, the claim elements are all discussed at various places in the Detailed Description of the Invention and amendments thereof.

For example, in claim 5, the feed chamber 7 in FIGS. 1, 3 (**amended paragraph beginning (apb) P4, L27**) is defined by downward extension 65 of external wall 51, bottom flange or base 52 and bottom tubesheet 53. Feed water is directed to the first stage tubes 8, receiving enough heat from hot water inlet 4, until boiling. Heat is furnished so that only part of the water is vaporized . . . vapor chamber 9 above the first upper tubesheet 63 of the first stage evaporator 61 is enlarged in order to permit passage of the vapor to the first stage vapor chamber 9.

In apb P5, L17: Boiling water rises into the tubes 8, splashing on the plate 14. Vapor flows to the final stage evaporator tubes 15 (Figs. 1 and 5) supported and sealed between a final upper tubesheet 73 and a final bottom tubesheet 74 in the final cylindrical vertical tube bundle 72 of the final stage evaporator 71, here named Cylindrical Bundle Evaporator. Touching the outside of the tube walls, the vapor condenses, giving up energy to boil the final stage salt water within the tubes 15. The condensate produced on the outside of the tube walls is collected on the bottom of the chamber 9 (Fig. 3) and pumped to a storage tank through the coil 17 and outlet 16, delivering sensible heat to the incoming salt water 6 through the coil 17, inside chamber 7.

In apb P5, L27: Second stage is fed by the remaining not vaporized first stage salt water, suctioned by the final stage lower pressure through tube 18, pouring into the tray 19 and flashing into vapor. On the tray, water directs to the central tube 20, dropping to floating head 21, feeding final stage tube bundle 72.

Claim 6 depends from claim 5 and covers the three stage 56 and larger embodiments (FIGS. 10-15). Second stage evaporator 81 and second intermediate vertical ring tube bundle 47 are referred in apb P7, L16. Tubes 85, second upper tubesheet 82, second bottom tubesheet 83, floating head 48, internal wall 49 with upward extension 87, external shell 50 and second stage vapor chamber 84 are disclosed in apb P7, L28. A new paragraph beginning on page 8 after line 3 shows that floating head 48 receives, by gravity feed, salt water vacuumed from the previous stage evaporator chamber 9 of the first stage evaporator 55 to second stage vapor chamber 84 onto annular tray 88 above second upper tubesheet 82 from which it drains through tube 89 to floating head 48 carried on the bottom tubesheet 83 through which it is drawn into the tubes 85 of evaporator 81. The apb P7, L23 discloses distillate outlet 45 as a means for drawing off condensate from the second stage evaporator.

Claim 7 depends from claim 6 and covers the four stage embodiment 57 having a third stage evaporator 91 shown in FIGS. 16 and 17. The third stage evaporator is identical to the second stage evaporator 81 (except for dimensions) so its components are all shown by primed numerals. The elements 45', 46', 47', 48', 49', 82', 83', 84', 85', 87', 88' and 89' are all discussed in the four paragraphs added to the specification beginning at page 8, after line 10 wherein the features of the four stage embodiment and the third stage evaporator are all discussed.

As to claim 8, the external walls 51, 40 and bases 52, 38 are shown in FIGS. 3 and 11, respectively.

In claim 9, the vapor chamber 9, cylindrical shell 54, flange 1, feed chamber 7, downward extension 65, first external wall 51, base 52, plate 53, upper tubesheet 63, are shown in FIG. 3

In claim 10, the second stage vapor chamber 84, second cylindrical shell 50, connection flange 86, external armor shell 46 are shown in FIG. 13.

In claim 11, the base 38, welded tubes 42-45, third stage vapor chamber 84', third cylindrical shell 50', feed chamber 66 and internal and external walls 39, 40 are shown in FIGS. 11, 16 and 17.

In claim 12, the apparatus 55 is shown in FIG. 1

In claim 13, the final stage vapor chamber 75, upper vessel 76, and final condenser 2 are shown in FIGS. 1, 7, 10 and 15.

In claim 14, means for cooling the final condenser - inlet and outlet water nozzles 26, 27 are identified in FIGS. 1 and 7 and eductor 10 is identified in FIG. 1 and shown in FIG. 10.

In claim 15, means for admitting hot water - inlet 4 and outlet 5 are identified in FIGS. 1 and 3 and shown in FIGS. 10 and 16.

In claim 16, means for conducting fresh water to storage - condensate outlet 16 is shown in FIG. 1 and 44 and 45 are shown in FIGS. 10 and 16.

It is submitted that the forgoing information should constitute sufficient evidence of applicant's position that there is no new matter in the application, since the original drawings are unchanged and the claims are all based on elements thereof. Also, the specification now includes specific support for the claim language. If the claimed subject matter is considered allowable, there should now be no new issues requiring further consideration and/or search. Finally, the present amendment contains no additional claims.

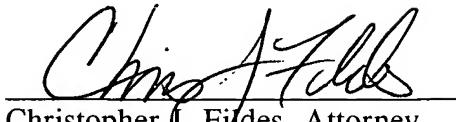
This amendment and reconsideration is believed to be fully responsive to the comments and suggestions of the examiner and to place this application in condition for allowance. Reconsideration of the application and withdrawal of the final rejection is now considered to be in order and is respectfully requested. Favorable action is requested.

A Petition For A Two-month Extension Of Time and a PTO-2038 authorizing payment in the amount of \$170.00 to cover the fee under 37 CFR 1.17(a)(2) is enclosed with this response.

Respectfully submitted,

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